
Supplementary information

The risks of overstating the climate benefits of ecosystem restoration

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Supplementary Information: The risks of overstating the climate benefits of ecosystem restoration

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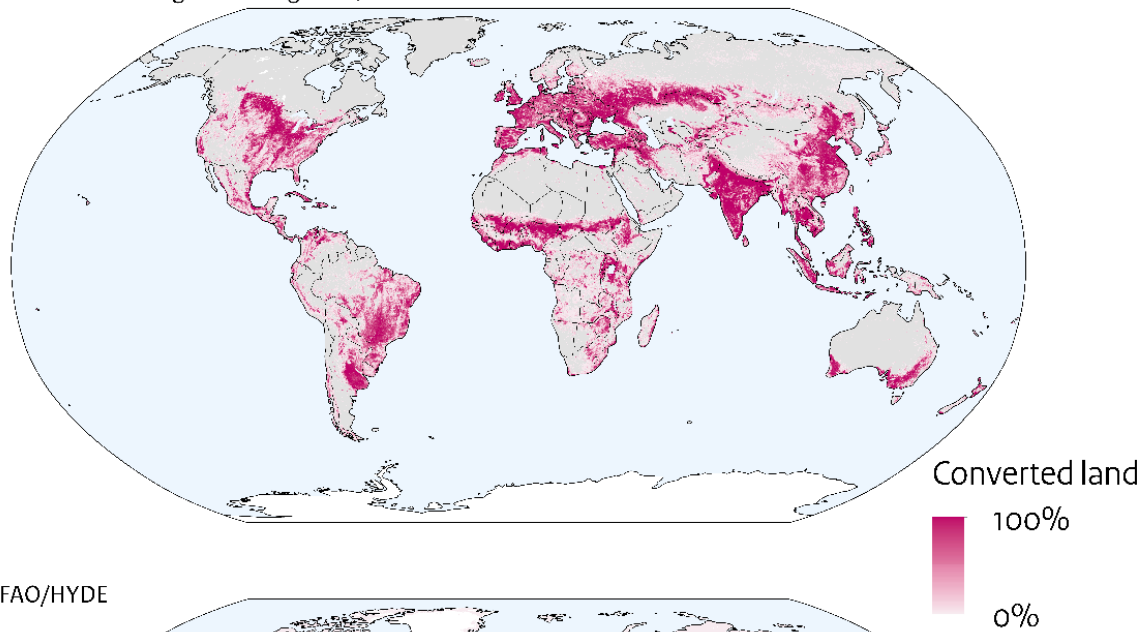
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Arising from Strassburg et al., 2020: <https://www.nature.com/articles/s41586-020-2784-9>

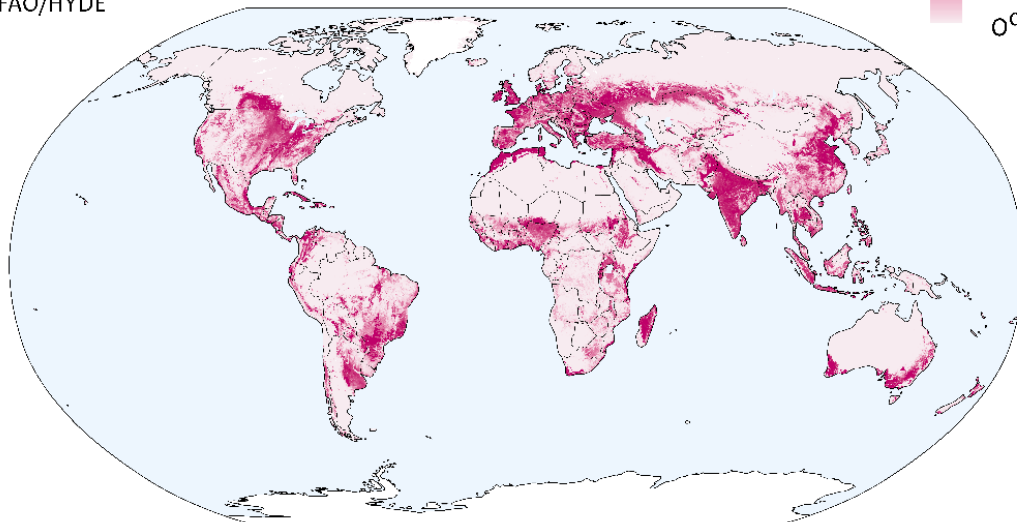
We compare converted land estimates based on ESA-CCI land cover data¹ according to Strassburg et al.² and converted land based on FAO data as allocated spatially in HYDE 3.2 (“FAO/HYDE”³) (Figure 1 and SI Figure 1): Following Strassburg et al., for the ESA-CCI land cover data we count all cropland classes including the mosaics (classes 10, 11, 12, 20, 30 and 40) to converted land. For the FAO/HYDE approach we also count all cropland to converted land. For both the ESA-CCI approach and the FAO-HYDE approach, respectively grassland (class 130) and grazing land are only considered to be converted land if they are located in a non-grassland ecosystem (e.g. forests) according to the ‘Terrestrial Ecoregions of the World’⁴ database and if the cattle density according the ‘Gridded Livestock of the World v2.0’⁵ is equal or higher than one head per km².

Converted land

ESA-CCI following Strassburg et al., 2020



FAO/HYDE



SI Figure 1: FAO/HYDE and ESA-CCI-based converted land on the grid level (percentage per grid cell) following assumptions from Strassburg et al.

References:

- 1 ESA. *Climate Change Initiative (ESA-CCI)*,
<<https://maps.elie.ucl.ac.be/CCI/viewer/download.php>> (April 2017).
- 2 Strassburg, B. B. N. *et al.* Global priority areas for ecosystem restoration. *Nature*, doi:10.1038/s41586-020-2784-9 (2020).
- 3 Goldewijk, K. K., Beusen, A., Doelman, J. & Stehfest, E. Anthropogenic land use estimates for the Holocene - HYDE 3.2. *Earth System Science Data* **9**, 927-953, doi:10.5194/essd-9-927-2017 (2017).
- 4 Dinerstein, E. *et al.* An Ecoregion-Based Approach to Protecting Half the Terrestrial Realm. *BioScience* **67**, 534-545, doi:10.1093/biosci/bix014 (2017).
- 5 Robinson, T. P. *et al.* Mapping the global distribution of livestock. *PloS one* **9**, e96084 (2014).